

WHAT IS CLAIMED IS:

1. A non-volatile storage device comprising a controller, a buffer memory, and a non-volatile memory, wherein, in response to control information from an external unit, said controller stores first data, entered from the external unit, into a first area of said buffer memory, controls a storage of the stored data further into a specified area of said non-volatile memory and, concurrently with the control of the storage into said non-volatile memory, may store second data, entered from the external unit, into the first area of said buffer memory.

2. A non-volatile storage device comprising a controller, a volatile memory, and a non-volatile memory,

wherein, in response to control information from an external unit, said controller stores data, which is entered from the external unit, into said volatile memory and then controls a storage of the stored-data into said non-volatile memory,

wherein said non-volatile memory comprises a plurality of word lines and a plurality of non-volatile memory cells and a data latch connected to each word line, the storage of data into said non-volatile memory being done by selecting one of the word lines and by storing the data, at a time, into the non-volatile memory cells connected to the selected word line, said data latch being able to latch data with a number of

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bits required to store data, at a time, into said non-volatile memory cells connected to the selected word line,

wherein said volatile memory is divided into a first area and a second area, the first area being used for processing performed by said controller, the second area being used to store data entered from the external unit, and

wherein said controller stores the data, which is entered from the external unit, into the second area of said volatile memory, sequentially transfers the data, which is stored in the second area, to the data latch beginning with a start of the data for storing the data into said non-volatile memory and, when the entered data is stored in the whole second area of said volatile memory, next data is stored, beginning with a start of the second area, into an area in the second area from which the data has been transferred to said data latch.

3. A data storage method for use on a non-volatile storage device comprising a controller, a volatile memory, and a non-volatile memory,

wherein data is stored into said non-volatile memory, a first data length at a time, and

wherein said controller executes the steps of:

- (1) receiving data from an external unit;
- (2) storing the received data into said

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volatile memory;

(3) transferring a data storage instruction signal and data with a first data length, stored in said volatile memory, to said non-volatile memory;

(4) receiving, from the external unit, data following the data which has been stored in said volatile memory, storing the received data into said volatile memory and, when the data received from the external unit is stored in a whole area of said volatile memory prepared for storing data, storing the data received from the external unit into an area where the data already transferred to said non-volatile memory has been stored; and

(5) after the data has been stored into said non-volatile memory, repeating said third step and said fourth step.

4. A non-volatile storage device comprising a controller, a buffer memory, and a non-volatile memory,

wherein said buffer memory comprises a plurality of banks, and

wherein, in response to control information from an external unit, said controller stores first data, which is entered from the external unit, sequentially into the banks of said buffer memory and then further stores the stored data into a specified area of said non-volatile memory and, concurrently with the storage of data into said non-volatile memory, stores second data, which is entered from the external

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unit, into a bank of said buffer memory from which data has been transferred to said non-volatile memory.

5. A non-volatile storage device according to claim 4, wherein a total storage size of all banks of said buffer memory equals a size of a unit of data that is written into said non-volatile memory at a time.

6. A non-volatile storage device according to claim 4, further comprising:

a status register or a status flag indicating a completion/incompletion of the data transfer from said buffer memory to said non-volatile memory,

wherein the status register or the status flag is controlled by said controller.

7. A non-volatile storage device according to claim 6, wherein said status register or said status flag indicates, for each bank, the completion/incompletion of the data transfer to said non-volatile memory.

8. A non-volatile storage device according to claim 7, further comprising:

a first register containing information on a bank into which data is being entered from the external unit; and

a second register containing information on a bank from which data is being transferred from said buffer memory to said non-volatile memory

wherein said controller judges the completion/incompletion of the data transfer to or from

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each bank, based on the bank information in said first register and said second register, to control said status register or said status flag.

9. A non-volatile storage device according to claim 7, further comprising:

a flag, for each bank, indicating whether or not the corresponding bank has data to be transferred to said non-volatile memory

wherein said controller judges the completion/incompletion of the data transfer to or from each bank, based on the flag status, to control said status register or said status flag.

10. A non-volatile storage device according to claim 4, further comprising:

a register in which an address range of said non-volatile memory is set; and

data storage error detection means for detecting whether or not data may be stored in said non-volatile memory based on the address information that is set in said register and an amount of the information or data that is entered from the external unit.

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